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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,873	08/04/2003	Stephen J. Hudgens	ITO.0048US (P16245)	5270

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EXAMINER	
SEFER, AHMED N	

ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/633,873	HUDGENS, STEPHEN J.	
	Examiner	Art Unit	
	A. Sefer	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *1-10 and 26-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed December 19, 2005 have been fully considered but they are not persuasive.

2. Applicant cites In re Venezia and argues that functional limitations can be effective where they define the corresponding structure. Furthermore, Applicant argues that the reference to a titanium alloy cited Sato et al. ("Sato") JP 2001-266406 is with respect to film 5, not to the chalcogenide film.

3. In response, it is noted that In re Venezia merely deals with the issue of whether a functional limitation complies with 35 U.S.C. 112, second paragraph which is not an issue in the instant application. With respect to the titanium alloy of Sato, Sato suggests (par. 0038 and 0039 and fig. 12) that the intervening layers between titanium alloy and the substrate may take other configuration as long as the configuration includes the chalcogenide film and discloses the titanium alloy and the chalcogenide film on top of each other indicating the introduction of titanium species into the chalcogneide film. It is held, absent evidence to the contrary that depositing titanium alloy and the chalcogenide film on top of each other would increase crystallization speed.

4. Applicant argues that Horie et al. ("Horie") US PG-Pub 2003/0214857discloses neither a titanium film being introduced into a chalcogenide film or a reduction of grain size of the chalcogenide film.

5. In response, it is pointed that Horie discloses (fig. 4 and pars. 0194 and 0077) a titanium film being introduced into a chalcogenide film. It is held, absent evidence to the contrary that introducing a titanium film into a chalcogenide film would increase crystallization speed.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 11, 12, 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato.

Sato discloses in figs. 1-8 a phase change material comprising: a chalcogenide 3; a species introduced into the chalcogenide material or Ge.sub.2Sb.sub.2Te.sub.5 (as in claim 12) including nitrogen (as in claim 14); and a species including titanium (as in claim 15) introduced into the chalcogenide (pars. 0020, 0025 and 0028-0029 of machine translated document).

8. Claims 11, 12, 14 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Horie.

Horie discloses (fig. 4 and par. 0194) a phase change material comprising: a chalcogenide 3; a species including nitrogen (as in claim 14) introduced into the chalcogenide material or Ge.sub.2Sb.sub.2Te.sub.5 (as in claim 12); and a species including titanium (as in claim 15) introduced into the chalcogenide (pars. 0077 and 0147).

Note that although the prior art meets the claim limitations "to increase crystallization speed"/"to reduce grain size" recited in claim 11, claims directed to an apparatus must distinguish from the prior art in terms of structure rather than function, In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also In re Swinehart, 439 F.2d210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971; In re Danly, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

9. Claims 16, 17, 19-21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato.

Sato discloses in figs. 1-8 a device or a semiconductor memory (as in claim 21) comprising: a substrate 6; and a layer of chalcogenide material 3 including Ge.sub.2Sb.sub.2Te.sub.5 (as in claim 17) over said substrate, said chalcogenide material including a species including nitrogen (as in claim 19) and a species including titanium (as in claim 20) (pars. 0020, 0025 and 0028-0029 of machine translated document).

Regarding claim 22, Sato discloses an insulator 7 over said substrate and under said chalcogenide material.

10. Claims 16, 17, 19 and 21-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Horie.

Horie discloses (fig. 4 and pars. 0194 and par. 0077) a device or a semiconductor memory (as in claim 21) comprising: a substrate; and a layer of chalcogenide material 3 including Ge.sub.2Sb.sub.2Te.sub.5 (as in claim 17) over said substrate, said chalcogenide material including nitrogen (as in claim 19); and a species including titanium (as in claim 20).

Note that although the prior art meets the claim limitations "to increase crystallization speed"/"to reduce grain size" recited in claim 16, claims directed to an apparatus must distinguish from the prior art in terms of structure rather than function, In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also In re Swinehart, 439 F.2d210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971; In re Danly, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

Regarding claim 22, Horie discloses an insulator 10 over said substrate and under said chalcogenide material.

Regarding claim 23, Horie discloses a heater extending 4 through said insulator to said chalcogenide material to heat said chalcogenide material.

Regarding claim 24, Horie discloses in fig. 4 titanium containing layer under said chalcogenide material.

Regarding claim 25 Horie discloses titanium containing layer being sufficiently proximate to said chalcogenide material that titanium may diffuse into the phase change material upon heating.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato/Horie.

Sato/Horie discloses the device structure as recited in the claim, but fails to disclose the recited grain size range. However, it was within one of ordinary skill in the art at the time the invention was made, therefore would have been obvious, to meet the recited grain size range, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. Furthermore, the specification contains no disclosure of either the critical nature of the claimed arrangement or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915.

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ANS
March 17, 2006